

C L A I M S

1. A chemical reactor comprising:

a first reaction section which has a first flow path and causes a first reaction in the first flow path;

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a heating section which heats the first reaction section; and

a second reaction section which has a second flow path and causes a second reaction in the second flow path by heat of the heating section transmitted via the first reaction section.

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2. The chemical reactor according to claim 1, wherein the first reaction and the second reaction are different reactions.

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3. The chemical reactor according to claim 1, wherein the second reaction is caused at a temperature lower than a temperature at which the first reaction is caused.

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4. The chemical reactor according to claim 1, wherein the first flow path and the second flow path are coupled.

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5. The chemical reactor according to claim 1, wherein the second reaction section has a vaporization reaction section which vaporizes a generation fuel, and the first reaction section has a reforming reaction section which reforms the vaporized generation fuel.

6. The chemical reactor according to claim 1,

wherein the first reaction section has a reforming reaction section which reforms the generation fuel, and the second reaction section has a carbon monoxide elimination section which eliminates carbon monoxide produced in the first reaction section.

7. The chemical reactor according to claim 1, wherein the first reaction section and the second reaction section are formed on the same substrate.

8. The chemical reactor according to claim 7, wherein heat of the heating section is transmitted from the first reaction section to the second reaction section via the substrate.

9. The chemical reactor according to claim 1, wherein a distance between the first flow path and the heating section is shorter than a distance between the second flow path and the heating section.

10. The chemical reactor according to claim 1, wherein the second flow path is disposed on a periphery of the first flow path.

11. The chemical reactor according to claim 1, further comprising a substrate in which grooves configuring the first flow path and the second flow path are formed.

12. The chemical reactor according to claim 1, wherein the first reaction section and the second reaction section are micro reactors.

13. The chemical reactor according to claim 1,

further comprising:

a thermometer section which measures temperature of the heating section.

14. The chemical reactor according to claim 13,
5 further comprising:

a control circuit section which causes the heating section to generate heat on the basis of temperature information of the thermometer section.

15. The chemical reactor according to claim 1,
10 wherein the heating section has a combustion section which performs heating by a combustion reaction.

16. The chemical reactor according to claim 15,
further comprising a substrate on which the first reaction section is formed, and wherein the combustion
15 reaction heats the first reaction section via the substrate.

17. The chemical reactor according to claim 1,
wherein the heating section has a resistive element.

18. The chemical reactor according to claim 1,
20 further comprising:

a third reaction section which has a third flow path and causes a third reaction in the third flow path by the heat of the heating section transmitted via the second reaction section.

19. The chemical reactor according to claim 18,
25 wherein the third reaction is caused at a temperature lower than the temperature at which the first reaction

is caused.

20. The chemical reactor according to claim 18,
wherein the third reaction is caused at a temperature
lower than the temperature at which the second reaction
is caused.

21. The chemical reactor according to claim 18,
wherein the third flow path and the first flow path are
coupled.

22. The chemical reactor according to claim 18,
wherein the third reaction section has a vaporization
reaction section which vaporizes the generation fuel,
the first reaction section has a reforming reaction
section which reforms the vaporized generation fuel,
and the second reaction section has a carbon monoxide
elimination section which eliminates carbon monoxide
produced in the first reaction section.

23. The chemical reactor according to claim 18,
further comprising a single substrate on which the
first reaction section, the second reaction section and
the third reaction section are formed.

24. The chemical reactor according to claim 23,
wherein the heat of the heating section is transmitted
from the first reaction section to the second reaction
section via the substrate, and further transmitted from
the second reaction section to the third reaction
section via the substrate.

25. The chemical reactor according to claim 18,

wherein a distance between the second flow path and the heating section is shorter than a distance between the third flow path and the heating section.

26. The chemical reactor according to claim 18,
5 wherein

the third flow path is disposed on a periphery of the second flow path.

27. A chemical reactor comprising:

a plurality of substrates including first and
10 second substrates laminated on each other;

a first reaction section which has a first flow path between the first substrate and the second substrate, and causes a first reaction in the first flow path;

15 a heating section which heats the first reaction section; and

a second reaction section which has a second flow path between the first substrate and the second substrate or between the second substrate and another substrate adjacent to the second substrate, and causes
20 a second reaction in the second flow path at a temperature, which is lower than a temperature at which the first reaction is caused, by the heating section.

28. A fuel cell system comprising:

25 a chemical reactor which comprises:
at least two substrates laminated on each other;
a first reaction section which has a first flow

path between the substrates, and causes a first reaction in the first flow path;

a heating section which heats the first reaction section; and

5 a second reaction section which has a second flow path between the substrates, and causes a second reaction in the second flow path at a temperature, which is lower than a temperature at which the first reaction is caused, by the heating section; and

10 a fuel cell which generates electricity by use of a fuel reformed by the chemical reactor.